

What is claimed is:

1. A continuously variable transmission comprising:

an input shaft;

an output shaft;

5 a continuously variable drive section connected between said input shaft and said output shaft, said continuously variable drive section including a roller that is mounted on a trunnion for movement therewith, wherein movement of said roller causes a change in a ratio provided by said continuously variable drive section between said input shaft and said output shaft;

10 a control system for selectively operating said continuously variable drive section in a torque control strategy under first predetermined operating conditions and in a ratio control strategy under second predetermined operating conditions.

2. The continuously variable transmission defined in Claim 1 wherein said
15 control system operates said continuously variable drive section in the torque control strategy when the rotational speed of said output shaft is less than a predetermined value, and operates said continuously variable drive section in the ratio control strategy when the rotational speed of said output shaft is greater than a predetermined value.

20 3. The continuously variable transmission defined in Claim 1 further including first and second gear assemblies that are alternatively connected between said continuously variable drive section and said output shaft, wherein portions of said first and second gear assemblies rotate at a synchronous speed at a predetermined
25 mode point.

4. The continuously variable transmission defined in Claim 3 wherein said
control system operates said continuously variable drive section in the torque control strategy when the rotational speed of said output shaft is less than the mode point, and
30 operates said continuously variable drive section in the ratio control strategy when the rotational speed of said output shaft is greater than the mode point.

5. The continuously variable transmission defined in Claim 3 wherein said control system operates said continuously variable drive section in the torque control strategy when the rotational speed of said output shaft is less than the mode point, and operates said continuously variable drive section in the ratio control strategy when the rotational speed of said output shaft approaches the mode point.

6. The continuously variable transmission defined in Claim 1 wherein said control system gradually transitions from operating said continuously variable drive section in the torque control strategy to operating said continuously variable drive section in the ratio control strategy.

7. The continuously variable transmission defined in Claim 6 wherein said control system assigns a first weighted factor to the torque control strategy and a second weighted factor to the ratio control strategy.

8. The continuously variable transmission defined in Claim 1 wherein said control system varies the first weighted factor and the second weighted factor to the ratio control strategy in response to the predetermined operating conditions.

9. A continuously variable transmission comprising:

an input shaft;

an output shaft;

a continuously variable drive section connected between said input shaft and said output shaft, said continuously variable drive section including a roller that is mounted on a trunnion for movement therewith, wherein movement of said roller causes a change in a ratio provided by said continuously variable drive section between said input shaft and said output shaft;

a control system that is responsive to an input signal for effecting movement of said trunnion and said roller; and

a feedback mechanism that is responsive to movement of said trunnion and said roller for causing said control system to alter the movement of said trunnion.

10. The continuously variable transmission defined in Claim 9 wherein said
5 feedback mechanism is responsive to axial movement of said trunnion and said roller for causing said control system to alter the movement of said trunnion.

11. The continuously variable transmission defined in Claim 9 wherein said
wherein said feedback mechanism is responsive to rotational movement of said
10 trunnion and said roller for causing said control system to alter the movement of said trunnion.

12. The continuously variable transmission defined in Claim 9 wherein said
wherein said feedback mechanism is responsive to axial movement and rotational
15 movement of said trunnion and said roller for causing said control system to alter the movement of said trunnion.

13. The continuously variable transmission defined in Claim 9 wherein said
control system includes a trunnion control valve that selectively provides pressurized
20 fluid to a trunnion cylinder containing a control piston, said control piston being connected to said trunnion for movement therewith, said feedback mechanism being responsive to movement of said trunnion for varying the operation of said trunnion control valve.

25 14. The continuously variable transmission defined in Claim 14 wherein said feedback mechanism includes a cam that is connected to said trunnion for movement therewith and a link that extends between said cam and said trunnion control valve such that movement of said cam with said trunnion causes movement of said link for varying the operation of said trunnion control valve.

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15. The continuously variable transmission defined in Claim 14 wherein said control system includes a trunnion actuator that is connected to said trunnion control valve by a link such that movement of said link by said trunnion actuator controls the operation of said trunnion control valve.

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16. The continuously variable transmission defined in Claim 15 wherein said feedback mechanism includes a cam that is connected to said trunnion for movement therewith and said link further extends between said cam and said trunnion control valve such that movement of said cam with said trunnion causes movement of
10 said link for varying the operation of said trunnion control valve.

17. The continuously variable transmission defined in Claim 14 wherein said cam includes a ramped surface that is engaged by said link.